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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,474	04/19/2004	Kazuyuki Usuki	Q80902	1519

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WASHINGTON, DC 20037

EXAMINER
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BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/826,474

Applicant(s)

USUKI ET AL.

Examiner

Kevin M. Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-38 is/are pending in the application.  
4a) Of the above claim(s) 9-17 and 27-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-26, 37 and 38 is/are rejected.
- 7) ☒ Claim(s) 18 and 37 is/are objected to.
- 8) ☒ Claim(s) 9-38 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/238,601.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/19/04; 9/16/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Preliminary amendments to the specification, cancellation of claims 1 - 8, and addition of claims 9 - 38, filed on April 19, 2004, have been entered in the above-identified application.
2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copies, *and the English translations thereof*, have been filed in parent Application No. 10/238,601.

### ***Election/Restrictions***

3. Applicant's election without traverse of Group I, claims 9 – 26 and 35 – 38 and species II (a primer layer containing Ru) in the paper filed October 28, 2005 is acknowledged. Claims 9 – 17 and 27 – 36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and/or specie, there being no allowable generic or linking claim. The requirement is still deemed proper and is therefore made FINAL.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. The Examiner notes that the pending claims are substantially identical to the claims in nine commonly assigned references (6 co-pending applications and 3 patents). In all cases, the references claim substantially identical subject matter and/or disclose the subject matter in portions of the specification providing support for the patent claims.

Applicants are reminded that while it is generally prohibited from using the disclosure of a potentially conflicting patent or application in an Double Patenting analysis, there are two exceptions permitted by the MPEP. Specifically, "those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent".

For brevity, the Examiner will outline the first double patenting rejection in detail, but will simply cite the relevant claims + disclosure sections relied upon for the subsequent rejections, since all the rejections follow essentially the same logic pattern. If there is any question on the double patenting rejections, applicants are invited to contact the Examiner to clarify the rejections.

6. Claims 18 – 26, 37 and 38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4 – 7 and 16 - 18 of copending Application No. 10/942,970 (see Moriwaki et al. – U.S. Patent App. No. 2005/0064243 A1). This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Regarding claim 18, Moriwaki et al. disclose a magnetic recording medium (*claim 1*) comprising a non-magnetic substrate (*claims 1 and 16 – 18*) containing a macromolecular film meeting applicants' claimed Markush group limitations (*claims 16 – 18*), said medium further comprising a primer layer (*claim 1 – Ru or RuCo layer*) and a magnetic layer (*claim 1*) formed on at least one surface of the nonmagnetic substrate, said primer layer containing at least ruthenium (*claim 1*) and said magnetic layer comprising a ferromagnetic metal alloy meeting applicants' claimed material limitations (*claims 1 and 4 – 7*).

Regarding claims 19 and 20, Moriwaki et al. disclose thickness values meeting applicants' claimed limitations (*claims 16 – 18*) and the Examiner takes Official Notice that one of ordinary skill in the art would recognized that magnetic recording media can take the form of magnetic tapes or magnetic disks, depending on the desired end use (e.g. floppy disks or VCR tapes).

Regarding claims 21 – 24, Moriwaki et al. disclose compositions and materials of the magnetic layer meeting applicants' claimed limitations (*claims 1 and 4 – 7*).

Regarding claims 25, 26, 37 and 38, Moriwaki et al. disclose Ru-alloy layers meeting applicants' claimed Ru concentrations (*Paragraph 0038 – 80%Ru*).

7. Claims 18 – 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 6 - 9 and Paragraphs 0017 – 0020 (*support*) and 0036 (*mixing ratio in magnetic layer*) of copending Application No. 10/862,315 (see Usuki et al. – U.S. Patent App. No. 2004/0258873 A1). This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. Claims 25, 26, 37 and 38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over copending Application No. 10/862,315 as applied above, and further in view of Shiroishi et al. (U.S. Patent No. 4,833,020).

Co-pending application 10/862,315 ("App '315") is relied upon as described above.

App '315 fails to disclose a Ru-alloy meeting applicants' claimed Ru concentration.

However, the Examiner deems that Ru and Ru-alloys meeting applicants' claimed Ru concentrations are known equivalents in the field of underlayers/primer layers suitable for magnetic recording media, as taught by Shiroishi et al. (*col. 2, lines 15 – 31 and col. 2, line 64 bridging col. 3, line 8*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Ru and Ru-alloys meeting applicants'

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claimed composition limitations are equivalents in the field of Ru-based primer layers for use in magnetic recording media. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

9. Claims 18 – 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4 - 7 and Paragraphs 0034 (*mixing ratio in magnetic layer*) and 0051 - 0055 (*support*) of copending Application No. 10/864,578 (see Moriwaki et al. – U.S. Patent App. No. 2004/0253487 A1). This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claims 25, 26, 37 and 38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over copending Application No. 10/864,578 as applied above, and further in view of Shiroishi et al. (U.S. Patent No. 4,833,020).

Co-pending application 10/864,578 ("App '578") is relied upon as described above.

App '578 fails to disclose a Ru-alloy meeting applicants' claimed Ru concentration.

However, the Examiner deems that Ru and Ru-alloys meeting applicants' claimed Ru concentrations are known equivalents in the field of underlayers/primer

layers suitable for magnetic recording media, as taught by Shiroishi et al. (*col. 2, lines 15 – 31 and col. 2, line 64 bridging col. 3, line 8*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Ru and Ru-alloys meeting applicants' claimed composition limitations are equivalents in the field of Ru-based primer layers for use in magnetic recording media. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

11. Claims 18 – 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **amended** claims 1, 2, 12 and 13 and Paragraphs 0035 – 0036 ( $\text{SiO}_x$ ) and 0037 (*mixing ratio in magnetic layer*) of copending Application No. 10/864,432 (see **the amended claims** of Moriwaki et al. – U.S. Patent App. No. 2004/0253484 A1). This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claims 25, 26, 37 and 38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over copending Application No. 10/864,432 as applied above, and further in view of Shiroishi et al. (U.S. Patent No. 4,833,020).

Co-pending application 10/864,432 ("App '432") is relied upon as described above.



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App '432 fails to disclose a Ru-alloy meeting applicants' claimed Ru concentration.

However, the Examiner deems that Ru and Ru-alloys meeting applicants' claimed Ru concentrations are known equivalents in the field of underlayers/primer layers suitable for magnetic recording media, as taught by Shiroishi et al. (*col. 2, lines 15 – 31 and col. 2, line 64 bridging col. 3, line 8*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Ru and Ru-alloys meeting applicants' claimed composition limitations are equivalents in the field of Ru-based primer layers for use in magnetic recording media. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

13. Claims 18 – 26, 37 and 38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **amended** claims 17, 18, 25, 29 and 32 and Paragraphs 0066 – 0067 ( $\text{SiO}_x$ ) and 0078-0080 (*Ru-alloy concentration*) of copending Application No. 10/753,366 (see **the amended claims** of Moriwaki et al. – U.S. Patent App. No. 2004/0142210 A1). This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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14. Claims 18 – 26, 37 and 38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **amended** claims 1, 3 – 8, 11, 12, 36 and 38 of copending Application No. 10/753,366 (see **the amended claims** of Moriwaki et al. – U.S. Patent App. No. 2003/0219630 A1). This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. Claims 18 – 24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2 and 8 and specification col. 4, lines 8 – 16 (*support*) of U.S. Patent No. 6,833,173 B1 (Nishikawa et al.) in view of Yamamoto et al. (U.S. Patent No. 6,177,208 B1).

Nishikawa et al. is relied upon in a substantially identical manner as the prior references.

Nishikawa et al. fail to disclose a CoCrPt-SiO<sub>x</sub> magnetic layer.

However, Yamamoto et al. teach that such magnetic layers possess high recording densities and, while adding Cr to the CoPt-SiO<sub>x</sub> system is not preferred, it is clearly taught by Yamamoto et al. (*col. 1, lines 36 – 61; col. 3, lines 29 – 48; and Figures 16 and 17*). The Examiner notes that one of ordinary skill in the art would have motivated to use a CoCrPt-SiO<sub>x</sub> system given the similar magnetic behavior over at least some of the range in SiO<sub>x</sub> concentration (*see Figures 16 and 17*) combined with the added benefit that Pt is known to be an extremely expensive element to add to magnetic layers, so replacing some of the Pt with Cr would reduce the associated cost

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of the medium (see examples in Yamamoto et al., where the CoPt- SiO<sub>x</sub> films have >40% Pt while the CoCrPt- SiO<sub>x</sub> films only utilize ~12% Pt).

16. Claims 25, 26, 37 and 38 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over U.S. Patent No. 6,833,173 B1 (Nishikawa et al.) in view of Yamamoto et al. (U.S. Patent No. 6,177,208 B1) as applied above, and further in view of Shiroishi et al. (U.S. Patent No. 4,833,020).

Nishikawa et al. and Yamamoto et al. are relied upon as described above.

Neither of the above disclose a Ru-alloy meeting applicants' claimed Ru concentration.

However, the Examiner deems that Ru and Ru-alloys meeting applicants' claimed Ru concentrations are known equivalents in the field of underlayers/primer layers suitable for magnetic recording media, as taught by Shiroishi et al. (*col. 2, lines 15 – 31 and col. 2, line 64 bridging col. 3, line 8*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Ru and Ru-alloys meeting applicants' claimed composition limitations are equivalents in the field of Ru-based primer layers for use in magnetic recording media. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

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17. Claims 18 – 24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 6 and 9 of U.S. Patent No. 6,893,714 B2 (Moriwaki et al.).

18. Claims 25, 26, 37 and 38 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over U.S. Patent No. 6,893,714 B2 (Moriwaki et al.) as applied above, and further in view of Shiroishi et al. (U.S. Patent No. 4,833,020).

Moriwaki et al. is relied upon as described above.

Moriwaki et al. fail to disclose a Ru-alloy meeting applicants' claimed Ru concentration.

However, the Examiner deems that Ru and Ru-alloys meeting applicants' claimed Ru concentrations are known equivalents in the field of underlayers/primer layers suitable for magnetic recording media, as taught by Shiroishi et al. (*col. 2, lines 15 – 31 and col. 2, line 64 bridging col. 3, line 8*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Ru and Ru-alloys meeting applicants' claimed composition limitations are equivalents in the field of Ru-based primer layers for use in magnetic recording media. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

19. Claims 18 – 26, 37 and 38 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 6 and 9 - 11 and specification col. 6, lines 31 – 37 (*Ru-alloy concentration*) of U.S. Patent No. 6,875,505 B2 (Moriwaki et al.).

### ***Claim Objections***

20. Claim 18 is objected to because of the following informalities: line 1: “substance” appears to be a typographical error and should recite “substrate”. Appropriate correction is required.

21. Claim 37 is objected to because of the following informalities: line 5: “n” should be “in”. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

22. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

23. Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 19 and 20 recites the limitation "support member" in line 2. There is insufficient antecedent basis for this limitation in these claims. This rejection can be overcome by replacing “support member” with “substrate”, which appears to be the

intent of the claimed subject matter (and is how the claims have been interpreted for the purposes of evaluating the prior art).

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claims 18 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. Patent No. 5,665,478) in view of Usuki (U.S. Patent No. 5,958,544).

Regarding claim 18, Suzuki et al. disclose a magnetic recording medium (*Title*) comprising a non-magnetic substrate (*Figure 1, element 10*) comprising a plastic (*col. 16, lines 29 – 32*), said medium further comprising a primer layer (*element 12*) and a magnetic layer (*element 13*) formed on at least one surface of the nonmagnetic substrate, said primer layer containing at least ruthenium (*col. 9, lines 12 - 23*) and said magnetic layer comprising a ferromagnetic metal alloy meeting applicants' claimed material limitations (*col. 5, line 11 bridging col. 6, line 8; col. 7, lines 34 – 44; and col. 10, lines 33 - 47*).

Suzuki et al. fail to teach using a plastic meeting applicants' claimed Markush limitations.

However, Usuki teaches that for flexible magnetic media, such as magnetic tapes and floppy disks, flexible polymers meeting applicants' claimed limitations can be used

for the support since they are relatively cheap, have good heat resistance, and result in easy to produce recording media (*col. 1, line 10 bridging col. 2, line 25; col. 3, lines 43 – 51; col. 5, lines 41 – 44; and col. 7, lines 13 – 25*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Suzuki et al. to utilize a plastic meeting applicants' claimed Markush limitations as taught by Usuki, since such a material can produce flexible media that are relatively cheap, have good heat resistance, and result in easy to produce recording media.

Regarding claims 19 and 20, Usuki teaches disk and tapes meeting applicants' claimed limitations (*col. 1, line 10 bridging col. 2, line 25 and col. 7, lines 13 – 25*).

Regarding claims 21 – 24, Suzuki et al. disclose adding concentrations of Si and oxygen in amounts meeting applicants' claimed limitations (*col. 5, lines 11 – 34 and col. 7, lines 34 – 44*). Regarding the substance being in the form of SiO<sub>2</sub>, the Examiner notes that while Suzuki et al. does not explicitly teach that the Si and Oxygen are contained in this form, Suzuki et al. does recognize that both the oxygen and the Si migrate to the grain boundary regions (*col. 7, lines 34 – 44 and col. 12, lines 38 – 47*), as well as disclosing CoCrPtSi alloys combined with oxygen (*col. 10, lines 33 – 47*). The Examiner notes that there is sound basis that the alloy contains SiO<sub>2</sub>, at least in the grain boundary region, since both the Si and oxygen migrate to the grain boundary region and, since oxygen is a gas, it must bind to something to be contained in the final alloy. The Examiner takes official notice that one of ordinary skill in the art at the time of applicants' invention would appreciate that SiO<sub>2</sub> acts as a grain segregant, exactly as

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Suzuki et al. is observing (see *Yamamoto et al.* – '208 B1). Applicants are invited to present evidence that the samples produced by Suzuki et al. do not necessarily possess SiO<sub>2</sub> as a non-magnetic grain segregant.

26. Claims 18, 21 – 26, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiroishi et al. ('020) in view of Yamamoto et al. ('208 B1).

Regarding claims 18 and 21 – 26, 37 and 38, Shiroishi et al. disclose a magnetic recording medium (*Title*) comprising a nonmagnetic support member (*Figure 1, element 1*) meeting applicants' claimed material limitations (*col. 8, lines 3 – 6*) and a primer layer (*element 7*) and a magnetic layer (*element 3*) formed on at least one surface of said nonmagnetic support member, said primer layer has a ratio of Ru in the range of 70 – 99 at% (*col. 2, lines 15 – 31*), and said magnetic layer comprises a Co-alloy, including Co-Pt or Co-Cr (*examples*).

Shiroishi et al. fail to disclose a magnetic layer meeting applicants' claimed composition limitations.

However, Yamamoto et al. teach that such magnetic layers possess high recording densities and, while adding Cr to the CoPt-SiO<sub>x</sub> system is not preferred, it is clearly taught by Yamamoto et al. (*col. 1, lines 36 – 61; col. 3, lines 29 – 48; and Figures 16 and 17*). The Examiner notes that one of ordinary skill in the art would have motivated to use a CoCrPt- SiO<sub>x</sub> system given the similar magnetic behavior over at least some of the range in SiO<sub>x</sub> concentration (see *Figures 16 and 17*) combined with the added benefit that Pt is known to be an extremely expensive element to add to



magnetic layers, so replacing some of the Pt with Cr would reduce the associated cost of the medium (*see examples in Yamamoto et al., where the CoPt- SiO<sub>x</sub> films have >40% Pt while the CoCrPt- SiO<sub>x</sub> films only utilize ~12% Pt*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Shiroishi et al. to utilize a magnetic layer meeting applicants' claimed composition limitations as taught by Yamamoto et al., since such a layer can achieve high recording densities at reduced cost versus CoPt- SiO<sub>x</sub> layers.

27. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiroishi et al. in view of Yamamoto et al. as applied above, and further in view of Usuki ('544).

Shiroishi et al. and Yamamoto et al. are relied upon as described above.

While Shiroishi et al. disclose polymeric substrates (*col. 8, lines 3 – 6*), none of the above disclose thickness values meeting applicants' claimed limitations.

However, Usuki teaches that for flexible magnetic media, such as magnetic tapes and floppy disks, flexible polymers meeting applicants' claimed material and thickness limitations can be used for the support since they are relatively cheap, have good heat resistance, and result in easy to produce recording media (*col. 1, line 10 bridging col. 2, line 25; col. 3, lines 43 – 51; col. 5, lines 41 – 44; and col. 7, lines 13 – 25*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Shiroishi et al. in view of

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Yamamoto et al. to utilize a substrate meeting applicants' claimed thickness limitation as taught by Usuki, since such a material can produce flexible media that are relatively cheap, have good heat resistance, and result in easy to produce recording media.

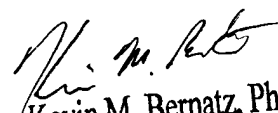
### ***Conclusion***

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB  
January 5, 2006

  
Kevin M. Bernatz, PhD  
Primary Examiner